

Effects of Interventions to Improve Individual's Adherence to Exercise Programs in People with Chronic Disease

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Background Information

- CVD is the primary cause of death in Canada [1]
- By 2030 COPD will be 3rd leading cause of death world wide [1]
- 9.3% US population suffers from diabetes mellitus, of which 90% have Type II Diabetes [2]

Benefits of Physical Activity

- Type II DM: regulates glucose levels [2]
- COPD: reduces risk of exacerbations, improves ventilation & strengthens respiratory muscles [3]
- Osteo- and Rheumatoid arthritis: maintain full joint excursion [4]

Poor Adherence

- Poor adherence is associated with a reduction in treatment effectiveness leading to poorer health [5]
- ~30-60% patients fail to adhere [6]
- The cost of treating non-adherent patients exceeds that afforded to the treatment of adherent patients [5]

Rationale

- Many studies have investigated barriers to exercise adherence or predictors of patient adherence
- Limited research focusing on ways to increase patient adherence

Research Question

Primary Question:

Are interventions aimed at improving exercise adherence effective in people living with a primary diagnosis of one or more of the following common chronic conditions: Ischemic Heart Disease, Hypertension, Type II Diabetes, Rheumatoid Arthritis, Osteoarthritis, or Chronic Obstructive Pulmonary Disease?

Secondary Question:

Are there tools aimed at increasing exercise adherence that are superior to others in maintaining lifelong patient compliance?

Methods

Search Strategy

- Adherence

- Adherence
- Compliance
- Motivation
- Guideline Adherence

- Exercise

- Exercise
- Physical Activity
- Walking

- Conditions

- Type II Diabetes
- Hypertension
- Chronic Obstructive Pulmonary Disorder
- Emphysema
- Coronary Disease
- Cardiovascular Disease
- Rheumatoid Arthritis
- Osteoarthritis

Database Search

- MEDLINE
- CINAHL
- EMBASE
- PEDro
- Sport Discus
- PubMed
- PsychINFO
- Cochrane Database of Systematic Reviews
- Web of Science
- Google Scholar

Period of time searched:
1950 – November 29, 2009

Study Selection

Inclusion Criteria

- Adults >18 years old
- Diagnosed with a common chronic condition:
 - Hypertension, Type II Diabetes, COPD, Ischemic Heart Disease, Osteoarthritis or Rheumatoid arthritis
- Prescribed an exercise program or physical activity guidelines
- Adherence intervention >1month
- Compares one adherence intervention to another or to a control
- Study includes adherence as an outcome measure

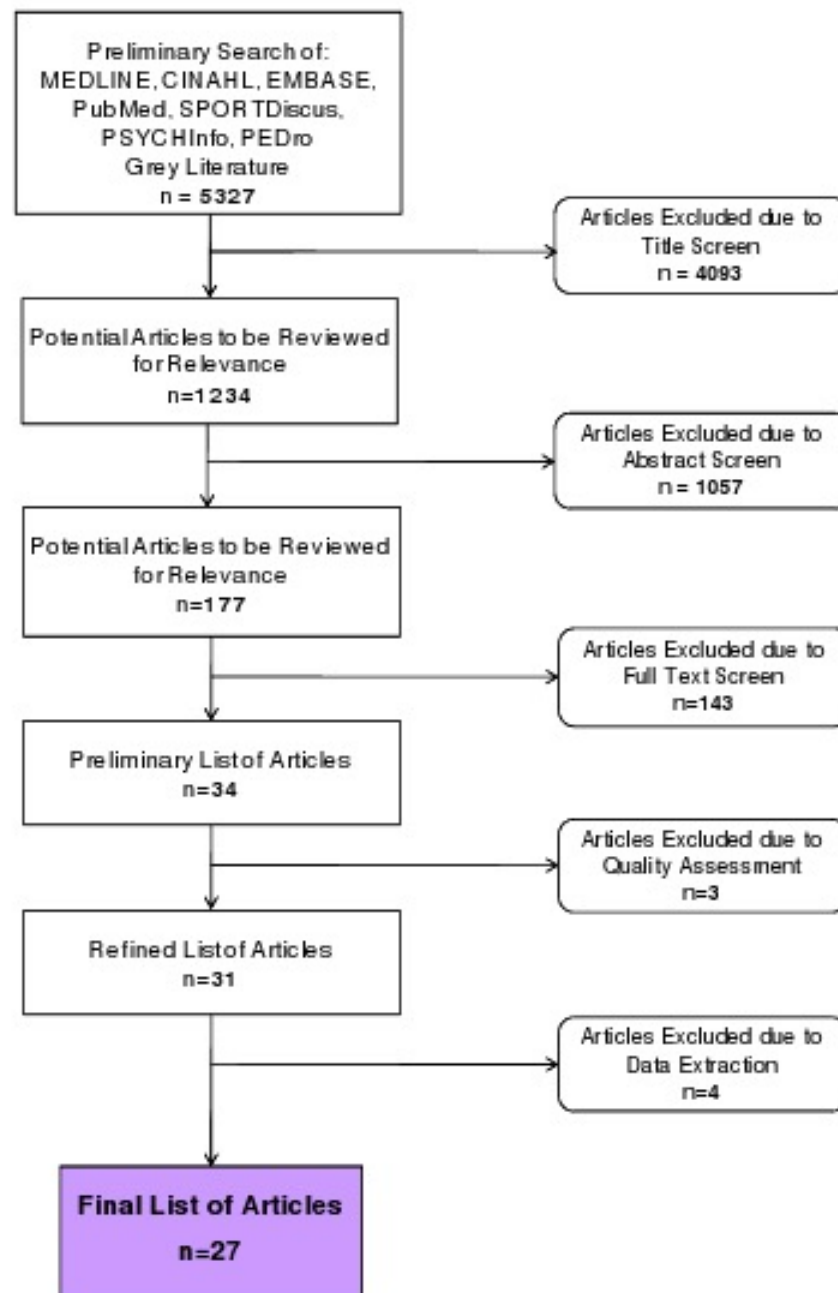
Study Selection

Exclusion Criteria

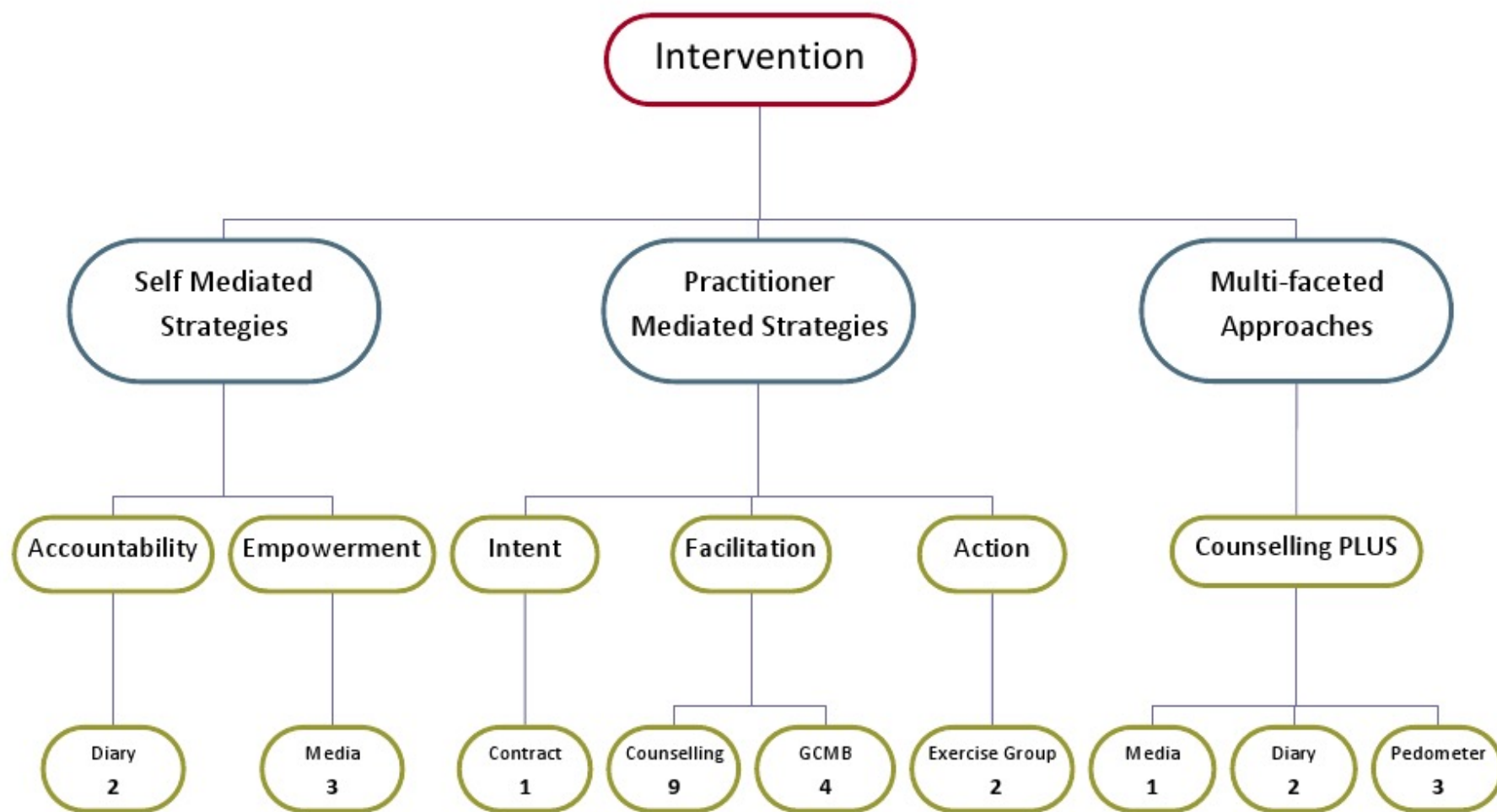
- Not published in English
- Animal studies
- Case Study
- Underlying pathology that would restrict ability to adhere to or participate in a physical activity program

Quality Assessment

- PEDro Scale (11 categories)
 - Low quality $<$ or equal to 3
 - Moderate quality = 4 or 5
 - High Quality $>$ or equal to 6
- Oxford Center for Evidence-based Medicine Levels of Evidence
 - Rated as either 1b or 2b
- On Average, the quality of articles are rated as HIGH
 - Mean score of 6/11



Results



****Numbers denote articles reviewed for each intervention**

Self Mediated Approaches

- Accountability
 - Diary
- Empowerment
 - Media

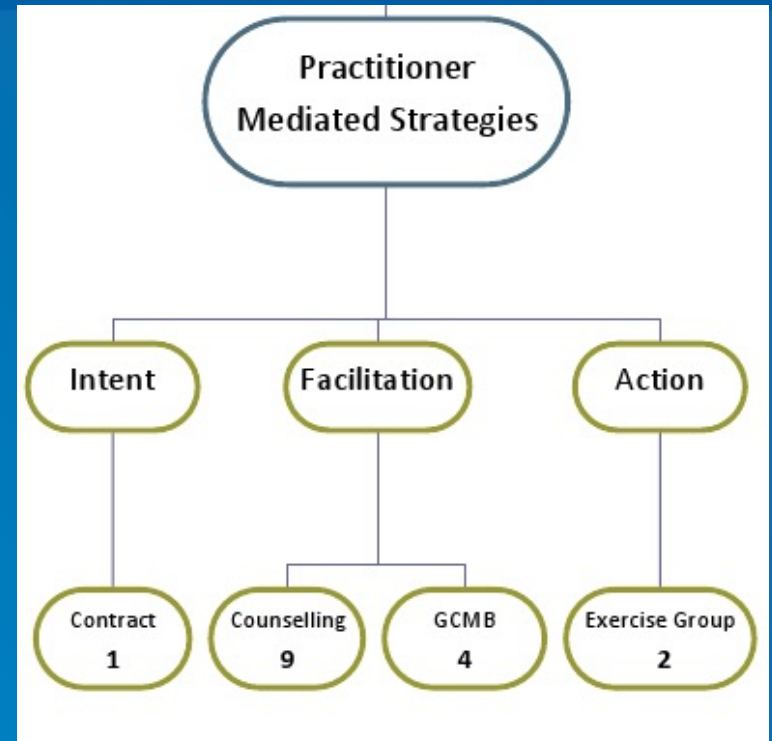


Self Mediated Approaches

- Accountability – (2 articles) [7-8]
 - Statistically significant increases in adherence with use of diary to record physical activity
- Empowerment – (3 articles) [9-11]
 - Videos (patient interviews; motivation/exercise; correct body mechanics in video, audio & written)
 - Patient interviews & motivation/exercise videos showed statistically significant increases in adherence rates
 - Body mechanics audio, video, & written saw a trend towards decreased adherence in all groups

Practitioner Mediated Approaches

- Intent
 - Contracts
- Facilitation
 - Counselling
 - Telephone
 - Face-to-Face
 - GMCB
- Action
 - Exercise group



Practitioner Mediated Approaches

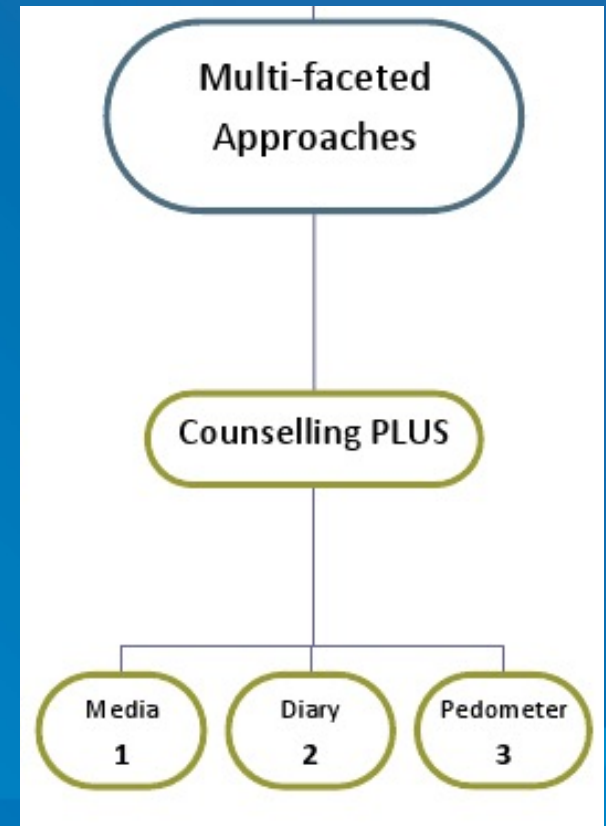
- Intent (1 article) [12]
 - 15 of 63 would *not* sign contract
 - Signed vs. not signed: 65% vs 20% adherence rate
- Action (2 articles) [13-14]
 - Home vs home + group sessions:
 - No evidence of increased compliance with home program
 - Group vs individual:
 - At 12 mos:
37% control group & 44% intervention group still participating
Of these 75% of control vs 68% intervention groups adhering to program

Practitioner Mediated Approaches

- Facilitation (13 articles)
 - Telephone Counselling (6 studies) [2,15-19]
 - 2–18 phone calls lasting up to 30 minutes
 - Statistically significant changes or a trend towards positive changes in adherence in all studies
 - Face-to-face counselling (3 studies) [20-22]
 - With spouse/partner, 1:1 or group counselling
 - 1–10 sessions from 10-90 minutes per session
 - Positive changes in adherence in all studies, 2 showed statistical significance
 - Group Mediated Cognitive Behavioural Therapy (4 articles) [23-26]
 - 4-20 sessions x 20-60 minute per session
 - A statistically significant or a trend towards increased exercise adherence rates in GMCB intervention groups

Multi-Faceted Approaches

- All included counselling in combination with an additional intervention
 - Media
 - Diary
 - Pedometer



Multi-Faceted Approaches

- Media (1 article) [27]
 - 30 min session with 5 f/u sessions + written physical activity & nutritional information vs usual care
 - Article found a trend towards increased exercise adherence
- Diary (2 articles) [28-29]
 - 3 vs 4 month intervention
 - Articles found a statistically significant or a trend towards positive change in adherence
- Pedometer (3 articles) [30-32]
 - 4-5 sessions over 8-18 weeks
 - Articles found a statistically significant or a trend towards positive change in exercise adherence

Results

- 27 articles based on 26 trials
- 26 demonstrated positive adherence changes with an adherence intervention tool
- 14 studies showed statistically significant increases in adherence
- 1 study showed a non-statistically significant decreased adherence trend

Discussion

Individual Mediated Strategies

- Accountability

- Diaries [7-8]

- Offer accountability

- Self

- Practitioner

- Produced good short-term and long-term effects

Individual Mediated Strategies

- Empowerment

- Media [9-11]

- Information empowers good decision making
 - No one form appeared superior
 - Timing of delivery had no notable effect
 - No long-term data

Practitioner Mediated Strategies

- Intent

- Contracts ^[12]

- Trend toward increased adherence
 - Low standard for adherence
 - Results may present bias

Practitioner Mediated Strategies

- Facilitation

- Counselling [2, 15-22]

- Short-Term

- Showed stronger evidence for increases

- Long-Term

- Demonstrated increases, reduced from short-term

- Follow up study reinforced this trend

- 6 months

- Point at which trials split from statistically significant to non-statistically significant

Practitioner Mediated Strategies

• Facilitation

- Group Mediated Cognitive Behavioural Focus [23-26]
 - All showed trends toward increased adherence
 - Short-Term
 - Increases not as strong compared to long-term
 - Long-Term
 - Strong evidence for increasing adherence
 - All self report measures

Practitioner Mediated Strategies

- Action

- Group Exercise Class ^[13-14]
 - High drop-out rates
 - Trend toward increased adherence

Multi Faceted Approaches

- Counselling PLUS ^[27-32]
 - Media
 - Diary
 - Pedometer
- All combinations helped to increase adherence
- No one combination is superior to the next
- Combining strategies is more effective than a single strategy

Limitations of Research

- Poor comparability between studies
- No standard definition or measurement for adherence
- No standard for outcome measures
 - Many self-report
- Poor generalizability of results
- Sparse long-term follow up data

Conclusion

Implications for Practice

- Adherence intervention tools have a positive effect on client adherence
- Any strategy is more effective than none
- Make adherence a focus of patient programs
- Consider patient preference
- Type of tool appears to be of little importance
 - Consider client preference

Implications for Research

- Adherence definition & measure is not consistent
- More research is needed:
 - Larger sample sizes
 - Multi-site trials
 - Between group analyses
 - Intervention tools
 - Disease populations
 - Expand intervention tools repertoire
 - Long-term follow up

Investigator's Recommendations

Tool	Recommended	Rationale for Recommendation	Considerations
Combination Approaches (counselling PLUS)	Yes	Favourable increase in adherence	- Consider patient preference and practitioner availability
Counselling	Yes	Favourable increase in adherence	- Method of delivery does not appear to affect results. - GMCB approach is better for long term
Diary	Yes	Favourable increase in adherence	- External accountability
Contracts	No	Poor evidence	- Consider patient motivation characteristics
Group Exercise	No	Poor Evidence	- Consider practitioner resources
Media	No	Poor Evidence	- Consider practitioner availability and resources

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 - Darlene Reid
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Questions

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